MODIS Team Meeting Minutes

Minutes of the MODIS Team Meeting held on Tuesday August 30, 1994.

Action Items:

91. Clarify the round-robin BRDF measurement requirements. Assigned to Guenther. Due 8/16/94

92. Determine the best way to balance the scan mirror. Assigned to Roberto. 7/19/94. Due 9/ 6/94.

93. Review the Instrument Flight Operations Understanding of 8/26/93. Provide comments by 9/30/94. Assigned to Roberto 8/ 8/94

94. Provide a detailed (high fidelity) analysis of scatter in the scan cavity. The results would determine the need for PF near field scatter measurements vs scan angle. Assigned to Guenther 8/23/94 Preliminary results due 10/15/94. Final due 12/ 6/94

95. SBRC & GSFC to team to investigate possible corrections for the spurious response effects in the filters. Assigned to Waluschka 8/23/94. Due 10/25/94

96. Investigate the potential impact of contamination to near field scatter. Assigned to Waluschka 8/23/94. Due 10/25/94

97. Review the SBRC IR&D report on the Indium Bump process and provide comments on acceptability. Assigned to Roberto, Martineau, and Ellis 9/30/94. Due 10/ 4/94

98. Review August schedules and provide a summary of subsystem schedule status. Assigned to Davis, Ferragut, Waluschka, Martineau, Safren, and Daelemans 8/30/94. Due 9/20/94

The following items were distributed:

1) Weekly Status Report #153
2) SBRC Memos submission from week #145
3) Minutes of the previous team meeting

Attendees:

Richard Weber	Bruce Guenther	✓ Larissa Graziani
✓ John Bauernschub	George Daelemans	✓ Bob Martineau
✓ Rosemary Vail	Patricia Weir	Bob Silva
✓ Lisa Shears	✓ Mitch Davis	✓ Robert Kiwak
✓ Mike Roberto	✓ Ken Anderson	✓ Harvey Safren
✓ Nelson Ferragut	Rick Sabatino	✓ Ed Knight
✓ Gene Waluschka	Cherie Congedo	Harry Montgomery
Bill Barnes	✓ Jose Florez	Marvin Maxwell
Les Thompson		✓ Bill Mocarsky

MODIS Team Technical Weekly September 2, 1994

Project -

1) A meeting on the need for a second thermal balance point in the EM thermal vacuum test will be held in Chris Scolese's office on Tuesday, September 6 at 2 pm. We gave up the structural/thermal model; and without the second thermal balance point, we would be giving up the EM thermal balance test. Testing of the radiant cooler by itself was not sufficient for determining how the instrument and cooler behave thermally as a system. The second temperature point allows the temperature versus power line to be drawn, and the thermal model can be validated. I believe it is very important to get the second temperature point. George Daelemans will present the technical case for the second thermal balance point.

2) Ken Anderson has compiled the proposed award fee milestones for the September 1 - December 31, 1994 time period.

Gene Waluschka-

1) Gene has sent in a form to Goleta for refund of the hotel tax. If this works out, we may be able to get to within the per diem on convenient hotels.

Jose Florez and Mitch Davis -

1) They are having some problems with 2 boards in the SAM

2) The only non functioning parts of the MEM are the mechanism controller card (bent pins) and the formatter card (one Actel FPGA failed, failure analysis will be performed). MEM expected to be fully functional by August 29.

3) A large insertion force is needed for the 180 pin connectors. SBRC looking for connector which requires low insertion force. In any event, for the protoflight model, the setup will assure the pins will be aligned.

Ed Knight -

1) Based on outline provided by Claire Wilda and meetings the week of August 26, Ed prepared a draft of the MODIS instrument ground system requirements. Claire will review plan with GSFC and SBRC personnel at the QMR.

2) Hardware for the GSFC TAC will be in next month.

Harvey Safren and Bill Mocarsky -

Favorable impression from Vern regarding CDR on the dedicated MODIS calibration facility (DMCF) being provided by Xiron. Expect to be able to deliver by October 14.

Bob Martineau -

1) The inability of the LWIR SCA to turn on has been traced to an intermittent spring in the dewar fixture holding the leadless chip carrier. The SCA leads are bonded to the leadless chip carrier which under spring pressure mates with its receptacle.

2) VIS and NIR noise floor - the filament for the source was vibrating. SBRC has gone to an LED to take care of this problem. There are some LED timing issues which are being worked.

3) S/MWIR PFM detectors -

a) completed cold probe testing of the best 41 out of 120 detector dies.

b) out of the 41 dies, there were 40 good subarrays. However, 20 more subarrays from the remaining dies may be usable.

c) One SCA requires 5 subarrays. SBRC has three complete sets plus some spares.

d) Subarrays with no hard failures have been designated by SBRC as A+, A, and A'. The A+ subarrays have 100 percent of the diodes meeting engineering filtering requirements and no soft failures, the A subarrays have all but one diode meeting engineering filtering requirements, and A' may become A or A+ by baking. There are no complete sets which are A+. However, with baking, some may become A+.

Larissa Graziani -

1) Terma post testing using Mole Kit should be done this week. This small vacuum chamber can get down to 10 to the minus 12 TORR. Outgassing products will be determined and quantified. About 20 Terma posts are in the test.

2) SBRC has no access to a thermal vacuum QCM. Total cost is about 36K, 18K for the QCM and 18K for the controller. LANDSAT and TRMM would be interested and would split the cost.

3) Vinyl gloves should not be used near optics because of possible contamination.

Nelson Ferragut -

Nelson is considering ways to measure the imbalance of the scan mirror.

Bob Kiwak -

Terma posts may be an outgassing or corrosion problem because the flux is not cleaned. The one step process melts the solder and heats the shrink tubing.

The following are the systems minutes from Tom Pagano:

From: SMTP%"tpagano@msmail3.hac.com" 30-AUG-1994 16:32:32.45

Subj: Systems Minutes

Message-Id: <9408302032.AA20674@igate1.hac.com>

Date: 30 Aug 1994 13:27:07 -0800

From: "Pagano, Thomas S" <tpagano@msmail3.hac.com>

Subject: Systems Minutes

Systems Minutes: 8/30/94

o Schedule Review: A revised EM integration and test schedule was presented. The new schedule requires expediency in integration of the telescope to allow for a vibration test the week of 9/15. Also the schedule highlights receipt dates of the MODIS System Fixture, and Rotary Tables. Polarization testing should commence at receipt of the PSA on 11/1. After MEM tests, the MODIS will be shipped to the DMCF (12/14). Ambient radiometric testing will be first performed in the DMCF.

o Vibration testing is scheduled to occur the week of 9/15. Tom Wolverton recommended vibration testing at Wiley labs. All parties concurred that this made sense because it will allow us to vibrate the OBA rather than just the AOA. This will save time in that we will not need to remove the telescope and rad cooler for vibe testing. Jim Bell to develop plan.

o Neil, T. Koch: Integration of the telescope and aft-optics are progressing well. It is our plan to complete the alignment of the LWIR (SWIR/MWIR already torqued to flight levels) objectives by tomorrow so that we can initiate installation of the telescope. Telescope must be installed by the end of the week so that next week we can perform baseline spatial testing.

o Jim's recent modeling shows that the data taken last week can be fit to a scatter curve if we adjust the mirror scatter to about 2%. There is some question as to the amount of stray light from the source that is scattering into the field of view. This needs to be investigated.

o Kampe: The design of the filter spot scanner for the VIS/NIR is complete, and parts are being procured. This system will allow us to measure the band 1,2 filter crosstalk effect. Methods to correct for the SWIR/MWIR & LWIR filter crosstalk effects for EM are under investigation.

o QMR splinter meetings are to be held on calibration, I&T, s/c interfaces, FPAs, and contamination. It was agreed that this effort could consume a lot of time and effort. It was also agreed that data should be presented in summary form and clearly understandable. More clarification from NASA is needed on these reviews. (Pending M. Roberto)

o Monthly reports are due.

o Dowler: Additional FPA testing is needed to uncover spatial effects observed at system integration. Investigation into the radiometric testing technique has uncovered noise anomalies. Corrective action uses an LED source approach.

o The need for a nadir panel for EM radiometric testing was discussed. This is needed for fixed pattern noise measurements.

o Wolverton: Vibration testing of the structural model was a success. The instrument is robust and meets the requirements. The MEM structure was sound. Deficiencies in the vibration platform structure made it difficult to determine the mainframe lowest mode.

o Bortfeldt: A list of temperature sensors is nearly complete. This list will be forwarded to G. Plews to purchase and install them.

End of Tom Pagano's Systems Minutes

Mike Roberto -

1) Scratch Dig Specs

There was a conversation with Tom Kampe on August 29. Tom discussed the scratch/dig specifications for the optics and how these specs have changed during the last several years. A relevant spec is MIL F 48616. Different letters are used to designate surface quality requirements for the various optical components. Revision L has the dimensions for reference only and the spec becomes basically a visual standard for surface defects. However, my understanding is that a 60 scratch now refers to a 6 micron scratch +/- 0.6 microns. The optical surfaces are coated which may further reduce the impact of scratch/digs. Since we are very sensitive to stray or scattered light, we need to be sure the MODIS optical surfaces are adequately specified and produced.

2) QMR Splinter Sessions -

There will be five formal splinter sessions at SBRC during the QMR in September. Ed Knight, Bob Martineau, Eugene Waluschka, and Larissa Graziani, Ken Anderson, and Mike Roberto provided specific requests for topics to be covered. These were faxed as suggestions to Tom Pagano on September 1.

Tom and I made a few changes in the list. The status of calibration splinter item 1d (Assessment of additional scattered light resulting from the 6 zone IF) will be addressed by GSFC at the splinter. Constraints on preparation and presentation time will result in some modification to the list. Tom will update the list and assign individuals on Tuesday.

3) Scan Mirror Imbalance -

I recommend SBRC consider the Kistler 3 component dynamometer for measuring the scan mirror imbalance. This device was identified by Steve Neeck as being used to balance the ASTER cooler.

This device is advertised to have a sensitivity < 0.01 Newtons. By GSFC calculations, a force of 0.001 N needs to be measured to meet the 0.3 kg mm imbalance specification. I believe the Kistler instrument (possibly with a little work) can meet the sensitivity requirement. If necessary, a modest increase in scan mirror speed would allow the Kistler to meet sensitivity requirements. This device is in the $20 to $40K cost region depending on the amount of electronics needed. The model #9255B or #9265B/9443B could be considered for MODIS.

Kistler is a Swiss company. An American address for the firm is Kistler Instrument Corporation, 75 John Glenn Drive, Amherst, NY 14228. The phone is (716)691-5100 and the fax is (716) 691-5226. Roger Brath from Kistler provided the data sheets to GSFC.

It is possible that trial and error may be needed to determine where to put the balance weights, if needed (small screws on the ends of the scan mirror). Nelson Ferragut has also raised the possibility that a balance solution may not be possible using the current plan for balancing.

Mike Roberto

September 2, 1994